RLC ENTERPRISES, RACING DIVISION

Track Commander User Manual

This manual should be used for quick reference and on track use for the Track Commander. Perfect for motorcycles, go karts, and race cars.

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May 11, 2011

Track Commander Quick Start Guide

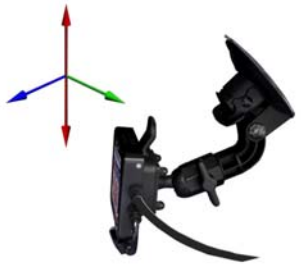
First and foremost thank you for purchasing a RLC Racing Track Commander. Please use this Quick Start Guide to help you install and setup your unit. This Quick Start Guide refers often to the Track Commander Getting Started Manual for more detailed procedures so please keep it on hand. This guide was written assuming the unit will be in road racing and predictive mode.

1 Unpack the Unit

Inside your box from RLC Racing will be your order, please check this with your invoice to make sure that you have everything you ordered and need.

2 Mount Unit In Car

Attach window suction cup mount to windshield then snap in the Track Commander. When mounting make sure that the Track Commander is as straight as possible so the internal 3-axis G-Force sensor reads correctly. Connect the cable harness to the unit then connect the GPS to the correct connector (marked GPS).



See Getting Started Manual For More Details

3 Mount the GPS Antenna

Place the GPS antenna on the outside of the car (not mounted under a panel, etc.), in clear view of the sky, away from the engine compartment or any type of electrical components, on the center line of the car (preferred), and as horizontal to the sky as possible to get the best GPS results.

See Getting Started Manual For More Details

4 Connect Power to the Unit

Connect the cigarette lighter adapter included with your Track Commander into the harness. Or if you purchased the direct connect power adapter, wire directly to the battery or the master cut off switch.

Do not connect to power behind the dash or ignition as it is not a clean source of power. Only connect to power using the power adapter included with your unit. If you do not use the power adapter from RLC or hook up power incorrectly (backwards), then the warranty will be voided, check terms and conditions for details.

See Getting Started Manual For More Details

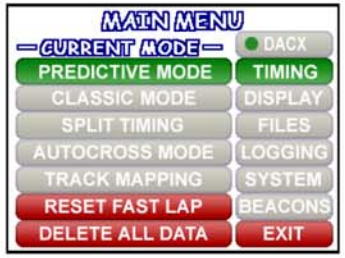
5 Start Your Car

Start your engine and verify that the Track Commander starts up immediately (turn power off immediately if dash does not power up instantly).

See Getting Started Manual For More Details

6 Select Mode

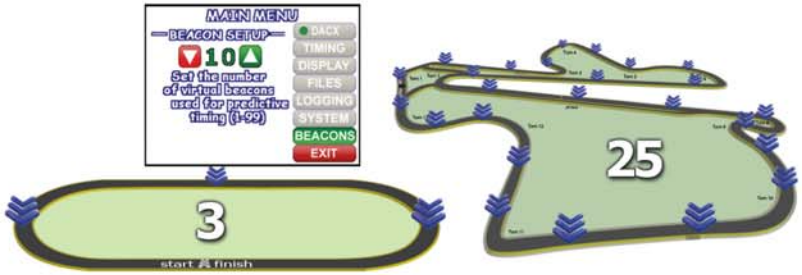
To select the timing mode, touch the screen (anywhere) then touch the Main Menu button that pops up on the bottom of the screen. Select the timing mode you want from the timing screen.



See Getting Started Manual For More Details

7 Set Number of Predictive Beacons

Assuming you have selected predictive mode, touch the Beacons button to set the number of beacons for predictive lap timing.



See Getting Started Manual For More Details

8 Set Logging Preferences

From the Main Menu screen touch the Logging button to set all logging preferences.

See Getting Started Manual For More Details

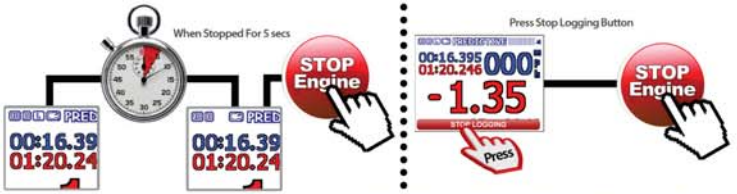
9 Setting a Start/Finish Line or Split Markers

Set a start/finish line (or split marker) by touching the button on the screen, while out on the track, and traveling at least 25 mph. Then drive one complete lap. Unit is now ready for the weekend.

See Getting Started Manual For More Details

10 Turn Off Car

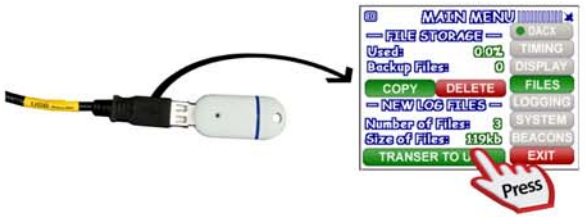
Before you remove power to the unit, it must be allowed to stop logging first! The 'L' in the upper left hand corner of the screen will turn off when the unit has stopped logging. If you do not let your unit stop logging before power is removed, you may lose lap information. You can manually stop logging or allow the unit to stop logging after a set amount of time (step 8).



See Getting Started Manual For More Details

11 Offload Data

To offload your session files simply plug the USB stick into the USB port marked USB memory stick. The unit will recognize the stick and prompt you to offload your session files.



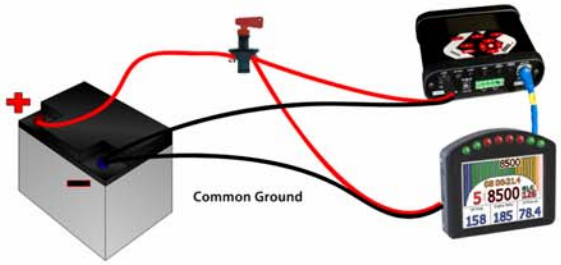
See Getting Started Manual For More Details

Synchronized Video Quick Start Guide

Please use this Quick Start Guide to help you get sychronized video working with your RLC race dash or Track Commander and ChaseCam PDR camera.

1 Connect Power

The ChaseCam camera needs to have it's own source of power, preferrably not batteries, and needs to share the same ground as the RLC unit. We recommend you power directly to the battery or to the master cut off switch (also connected directly to the battery).



2 Firmware on ChaseCam PDR Camera

Check the ChaseCam PDR camera to see if it has version 01.02.12 or newer. If you just purchased your ChaseCam PDR camera from RLC Racing or directly from ChaseCam it will have the latest version of firmware. To check the version number, look at the screen while the camera is booting.

If your unit requires updating, visit www.chasecam.com/pdr-update.

3 Settings on the ChaseCam PDR Camera

If your ChaseCam PDR camera has up-to-date firmware there is a pre-defined set up option that allows the PDR to work exclusively with RLC units.

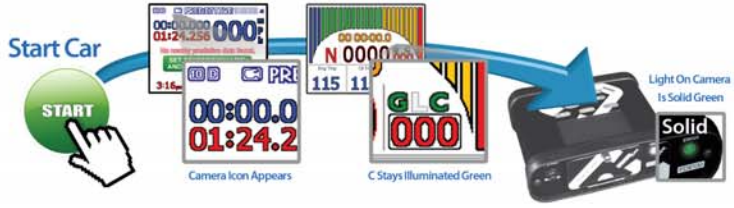
To load this pre-defined option press the Menu button on the ChaseCam PDR camera, select the Shortcuts option, select the Data Acquisition option, then select Data Acq 5 - Chase RLC. There are no settings on the RLC unit that need to be set.

4 Connect Camera to RLC Unit

If you just purchased your ChaseCam PDR camera from RLC Racing, connect one end of the video cable included with the camera to the connector marked video on the harness of the RLC unit and the other end into the back of the ChaseCam PDR camera. If you did not order your ChaseCam PDR camera from RLC Racing then you will need an Ethernet cable (a cross over cable will not work). The car should be turned off when connecting cables.

5 Start Your Car

Start your engine and verify that the RLC unit starts up and connects to the ChaseCam PDR camera. You can verify connection by looking at the screen of your RLC unit. Track Commander units will have a camera icon appear in the top left hand corner of the screen and the Micro Pod or Pro units will have a green C illuminate on the screen. Look at the ChaseCam PDR camera and verify that the light on the front is green to indicate power.



6 Verify ChaseCam Recording

The ChaseCam PDR camera will start recording as soon as the RLC unit starts logging data. There are indicators on both the Track Commander (L in upper left hand corner) and the Micro Pod/Pro units (L indicator in GLC field illuminates green) to let you know when the RLC unit is logging. Look at the ChaseCam PDR camera and verify that the light on the front is now blinking red to indicate recording.

7 Turn Off Car

Before you remove power to the RLC unit, it must be allowed it to stop logging first! The 'L' in the upper left hand corner of the screen (Track Commander) or right above the MPH (Micro Pod or Pro unit) will turn off when the unit has stopped logging. If you do not let your unit stop logging before power is removed, you will corrupt your synchronized video file. Verify your RLC unit's setup to know how your unit stops logging; either by waiting a set amount of time or when the engine is turned off.

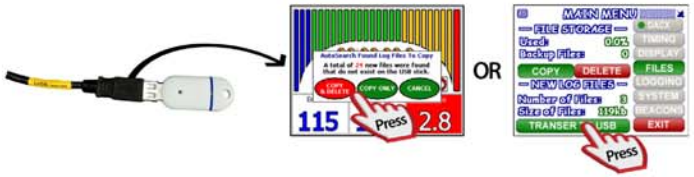
8 Offload Synchronized Video File

To offload your synchronized video files simply pull the compact flash card out of the ChaseCam PDR camera. The .mpg files on the compact flash card not only contain the video file but all the data as well. To analyze your sychronized video file open the .mpg file in the RLC Race Analysis software.

9 Corrupt Synchronized Video File?

If you find that your camera accidentally turns off while you were out on the track or you remove power too soon, your synchronized video file will be corrupted. You cannot open it in the RLC Race Analysis Software but you can still view it as a standard video.

The log file on the RLC unit can always be used for data analysis even if the synchronized video file is corrupted. The data (.bin) log file on the RLC unit only contains the data, not the video. Use the USB memory stick included with the RLC unit to offload the log file.



10 Don't See the Video?

If you don't see the video when you open the synchronized video log file in the Race Analysis Software you may need to download and install a video driver. Please visit our website at http://rlcracing.com/downloads-video.html to find out how to download and install the correct video driver for your PC.

Exact Track Map Quick Start Guide

Please use this Quick Start Guide to help you create an Exact Track Map. A more detailed explanation on Exact Track Mapping can be found in the User and Drivers Manual (Ch 4).

1 Verify Differential Satellite Connection

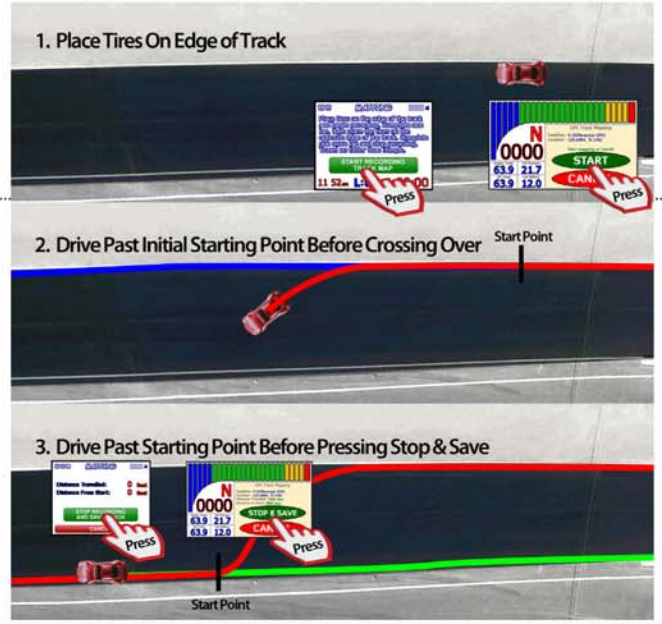
The RLC unit needs to be connected to a differential satellite before mapping a track. The GPS sensor screen will indicate a differential connection on the Micro Pod or Pro unit and a D will appear in the upper left hand corner of the Track Commander screen to show it is connected to a differential satellite.

2 Enter Track Mapping Mode

While in the hot pits navigate to the track mapping screen. On the Track Commander tap the screen, touch the Main Menu button, touch the Track Mapping button, then press the Exit button. On the Micro Pod or Pro unit, tap the screen until you get to the sensor screen, tap in the sensor screen until the GPS Track Mapping Screen appears, then press and hold the Enter button.

3 Start Mapping the Track

With your tires positioned on the edge of the track (either the inside or outside), driving slowly (about 20 mph), press the Start button and drive around the track. Drive past your initial start point then immidiately drive over to the other side of the track and place your tires on the opposite edge and drive around. After your drive past the initial point on the second side press the Stop and Save button.



4 Send Your Log File to RLC Racing

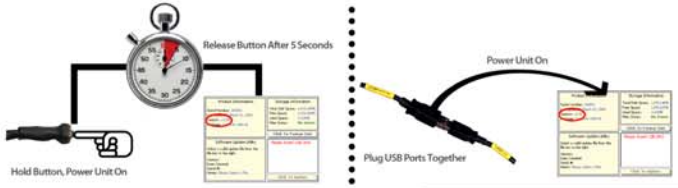
Once you have created an Exact Track Map file (.bin) you need to send it to RLC so we can make the Exact Track Map. Send track maps and links to the track website to info@rlcracing.com. We will send the Exact Track map to you and we will also post it online for others to use.

Update and Restore Quick Guide

First and foremost thank you for purchasing a RLC Racing Track Commander, Micro Pod or Pro Unit. Please use this Restore Quick Guide to help you update and restore your unit. This Update and Restore Guide refers often to the User and Drivers Manual for more detailed procedures so please keep it on hand.

1 Verify Version Number

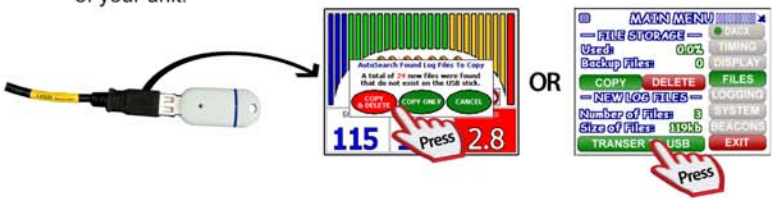
Before you update your unit, verify what version of the firmware it is running. To place your newer model unit in Update Mode, power the unit on with the program button pressed then release button after 5 seconds. To place your older model unit in Update Mode, plug the USB ports into each other then power the unit on. The version number can be found in the box in the upper left hand corner of the screen.



See User Manual For More Details

2 Offload Existing Log Files

We highly recommend that you offload any log files that you may have on your unit that you may want. Updating the unit will erase all log files. For Micro Pod and Pro users only, we recommend that you make a backup of your unit.



See User Manual For More Details

3 Download Latest Firmware

Download the latest version of firmware and default registry for your unit from our website, http://rlcracing.com/downloads-pc-software.htm, and place the downloaded firmware on the USB stick included with your unit.

See User Manual For More Details

4 Update Unit and Format Unit

Place your unit in Update Mode by powering the unit on with the restore button pressed then release button after 5 seconds or plug the USB ports into each other (depending on your model). Plug in the USB memory stick and select the firmware from the window, then touch the Click to Update button. Another window will appear, touch the Continue button. Make sure that power is not interrupted. When the unit has finished updating touch the Return to Main Menu button. When your unit has successfully updated press the Click to Format button to format your unit. Power your unit off and on.

See User Manual For More Details

5 Restore Unit (Track Commander Users Skip This Step)

For **Micro Pod and Pro users** you will now need to restore your unit with the backup file you made in step 2 or with the default registry file you downloaded from the website in step 3. With the mouse and USB memory stick plugging into your unit (with the USB hub), power the unit on. Click on the File Manager button, select your backup file from the window, then click the Restore button. The unit willl automatically reboot and you can now load your car file.

If you are using the Factory Default Configuration File it needs to be put in the System Backups folder on your USB stick. You can create this folder if it doesn't already exist. Plug in the USB stick, click on the RLC Racing Folder, then create a System Backups folder.

See User Manual For More Details

GoPro Quick Start Guide

First and foremost thank you for purchasing a RLC Racing Track Commander. Please use this Quick Start Guide to help you connect a GoPro camera to your Track Commander. This Quick Start Guide refers to the Track Commander Getting Started Manual and the Pro Race Analysis Software manual for more detailed procedures so please keep them on hand.

1 Setup the Track Commander

Navigate to the System screen on the Track Commander. Touch the Video button. The Select Camera window will appear, touch the Auxiliary button **(Do not change the settings)**. Touch Exit and the Track Commander is now setup to connect to the GoPro camera. Power off the Track Commander.

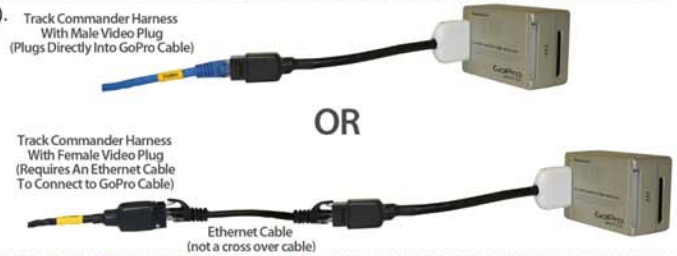
See Getting Started Manual For More Details

2 Setup the GoPro Camera

The GoPro camera needs to be set to One Button On mode. Please refer to the instruction manual included with your GoPro camera on how to place it in the One Button On mode. The instructions can also be found at the GoPro website, visit www.gopro.com/support.

3 Connect Cable to GoPro

Plug the cable you purchased from RLC into the back of the GoPro camera. Plug the video cable on the Track Commander harness into the other end. Depending on which style harness you have, you may need to purchase an Ethernet cable to connect to the GoPro camera (a cross over cable will not work).



4 Power on the Track Commander

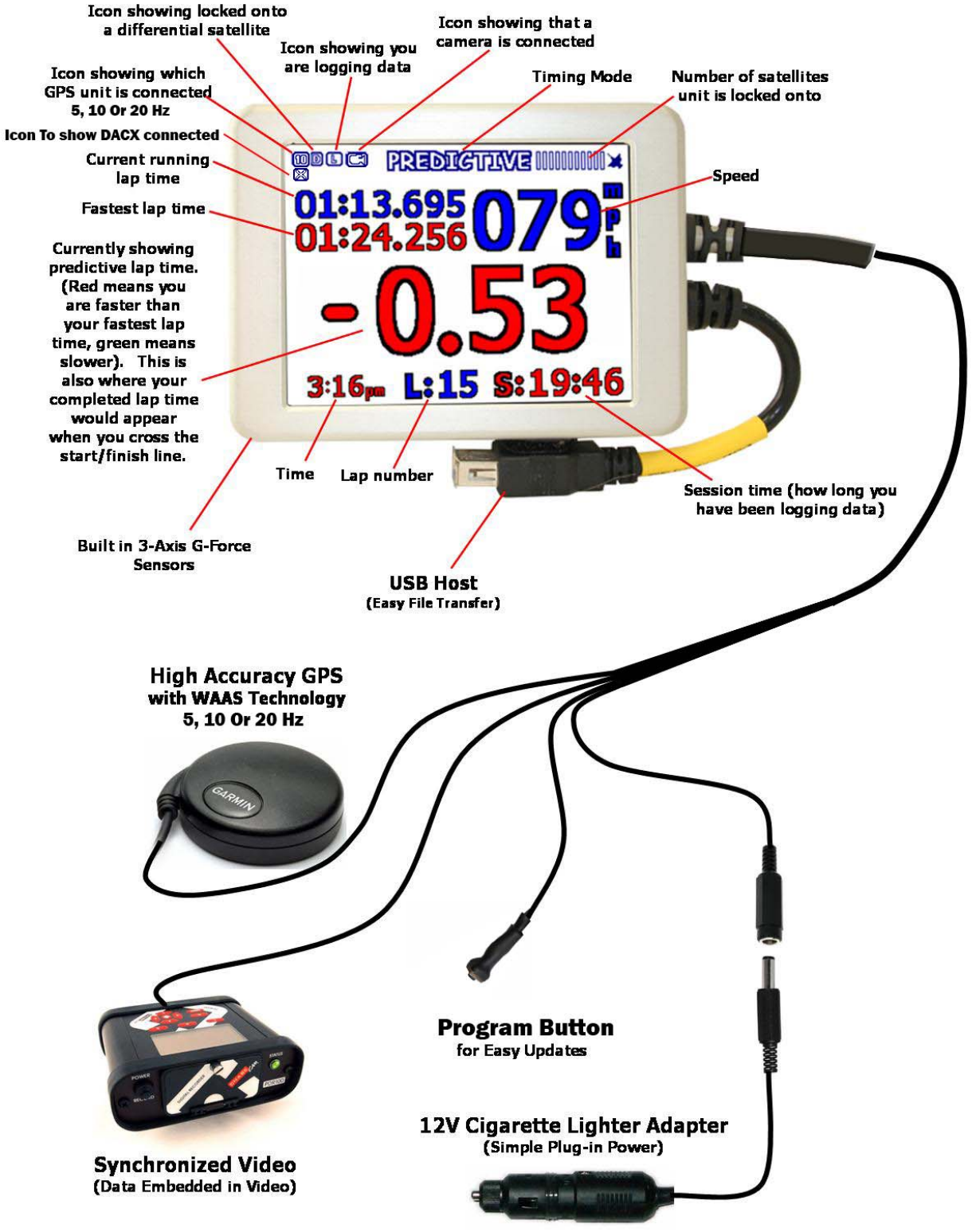
Apply power to the Track Commander. You will notice that the GoPro camera will turn on and it will automatically turn off once the Track Commander has fully booted up. When the Track Commander has started logging data (the L in the upper left hand corner wil be on) the GoPro camera will turn on and start recording. When the Track Commander has stopped logging data (L will turn off) the GoPro will stop recording and turn off.

See Getting Started Manual For More Details

5 Synchronize Data

In order to manually synchronize the data to the video you will need to offload the log files from the Track Commander and the video files from the GoPro camera. Now use the Pro Race Analysis software to synchronize the two files. Please refer to the Pro Race Analysis Software manual for more details.

See Pro Race Analysis Software Manual For More Details


Icon showing locked onto a differential satellite
Icon showing you are logging data
Icon showing that a camera is connected
Icon showing which GPS unit is connected 5, 10 Or 20 Hz
Timing Mode
Number of satellites unit is locked onto
Icon To show DACX connected
Current running lap time
Fastest lap time
Speed
Currently showing predictive lap time. (Red means you are faster than your fastest lap time, green means slower). This is also where your completed lap time would appear when you cross the start/finish line.
PREDICTIVE
01:13.695
01:24.256
079
MPH
-0.53
3:16pm
L:15
S:19:46
Time
Lap number
Session time (how long you have been logging data)
Built in 3-Axis G-Force Sensors
USB Host
(Easy File Transfer)
High Accuracy GPS
with WAAS Technology
5, 10 Or 20 Hz
GARMIN
Program Button
for Easy Updates
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Introduction

First and foremost, thank you for buying our products. You are a valued customer and R.L.C. looks forward to a mutually beneficial relationship with you. In order to help insure your success, we have prepared this Getting Started Guide for you. Use this step-by-step Getting Started Guide/User Manual to get started for the first time and as a reference during the normal operation of your Track Commander. The Track Commanders have a touch screen for navigation. Simply tap on the screen to make your selection or to get to another screen. We will cover how to get around the unit using only the touch screen in the section below.

Installation

Attach the Track Commander unit to the suction cup mount by snapping it in, RLC Racing logo should be on the top. Now with the unit attached to the suction cup mount, mount the unit to the windshield in a desirable place. You will want to mount it close enough so you can touch the screen easily when your seat belts are tight, you will need to do this when you set a start/finish line. Connect the GPS unit to the connector marked GPS on the harness. You will want to mount the antenna for the GPS unit on the outside of the car so it is in clear view of the sky. The antenna is magnetized so it is easy to mount almost anywhere. For customers using the 10 Hz GPS unit, we have included a piece of Velcro so you can securely mount your GPS unit anywhere in your car. The 5 Hz GPS is an all-in-one unit and is magnetized so that it mounts to the outside of the car easily, no Velcro is required. We recommend that you place the GPS antenna somewhere on the center line of your car (away from the engine compartment) in clear view of the sky.

Booting Up

To power the Track Commander, plug it into the cigarette lighter. The 5 Hz GPS is powered through the harness of the Track Commander but the 10 Hz needs its own source of power. Depending on your car you may need to turn the car on. Once you have powered the unit, you should see a startup screen (Fig 1). This screen will display while the system is loading for a few seconds and then you will see the driving screen (Fig 2). The driving screen is the screen which you will use during races. The GPS will take about a minute to connect and the screen will change to Figure 3. This screen will be referred to as the Driving screen. You will set the start/finish later.

Figure 1 – Startup Screen

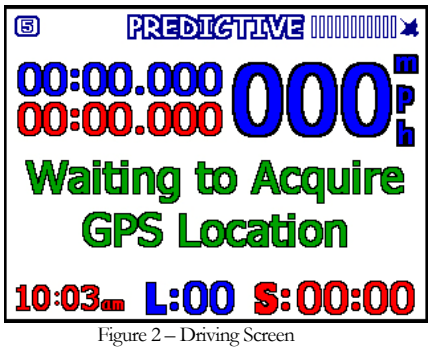

Figure 2 – Driving Screen

Figure 3 – Driving Screen Ready

Getting Around

Navigating through the different screens of the Track Commander is easy; simply use the touch screen. To navigate to the different screens, touch the screen and buttons will pop up from the bottom and top of the screen. To select user preferences touch the Main Menu button, to review a summary of your last session touch the Summary button, and to change to performance mode touch the Performance button. The drifting mode will be available in a future release (Fig 4).

Figure 4 – Navigation Buttons

Indicator Field

The indicator field is a useful tool for drivers to know whether you are connected to satellites, logging, or if a camera is attached. There will be a '5', '10', or a '20' in the indicator field to indicate which GPS unit you have connected to your unit. In the upper right hand corner there is a GPS satellite bar that lets you know how many satellites you are connected to and it will blink on and off when it is connecting to satellites. The 'L' stands for logging and it will turn on when the Track Commander has started logging data and will turn off when it stops logging. The camera icon will turn on if a ChaseCam camera system is connected to the Track Commander. The 'D' stands for differential satellite mode. The 'X' will appear if a DACX module is connected.

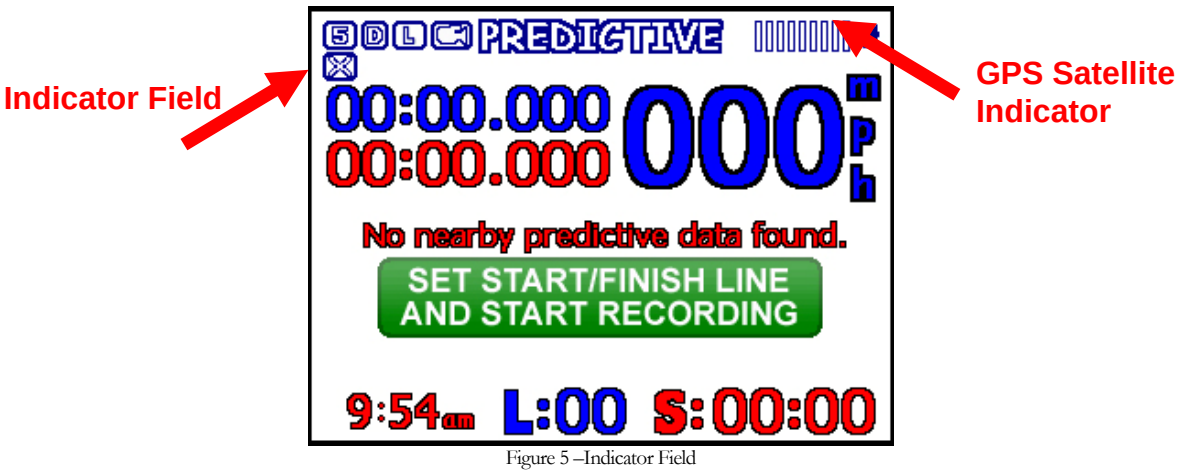

Figure 5 –Indicator Field

Lap, Predictive, and Split Times

Lap times are displayed during the race and require no user intervention. Please see the GPS chapter on how to set up the lap timers. Lap times, predictive and split times are flashed on screen and remain on screen for a set amount of time (Fig 6, 7, and 8). Below the lap time is a value that tells you if you were faster (time displayed in red) or slower (time displayed in green) than your fastest lap time. The predictive lap time displays the time

difference between your fastest lap time and your current lap time at that particular spot on the track. The split lap time displays your time between the markers you set on the track and the time difference between your best time and your current time.

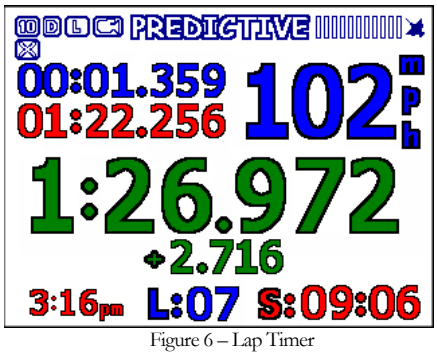

Figure 6 – Lap Timer

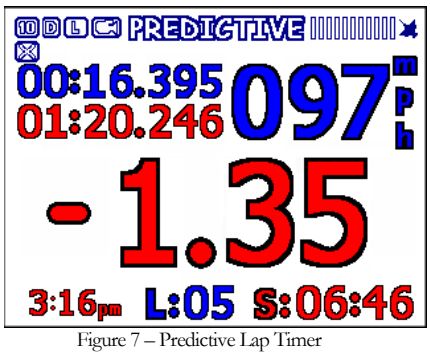

Figure 7 – Predictive Lap Timer

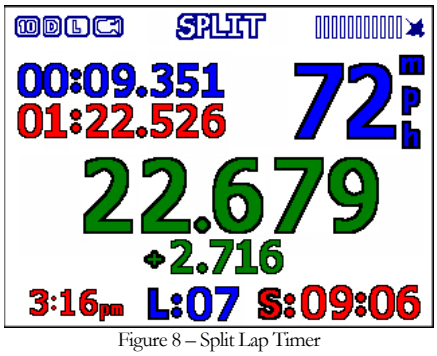

Figure 8 – Split Lap Timer

Session Timer / Lap Counter

The session time and lap counter are displayed on the bottom of the driving screen (Fig 9). The lap counter keeps track of number of completed laps you have made; it will increase every time you cross the start/finish line and complete a lap. Please see the setting the start/finish line section below on how to set the start/finish line. The session time is denoted by the 'S' and displays how long you have been on the track and you can figure out how long until the end of a timed race. The session time automatically starts when you reach logging speed.

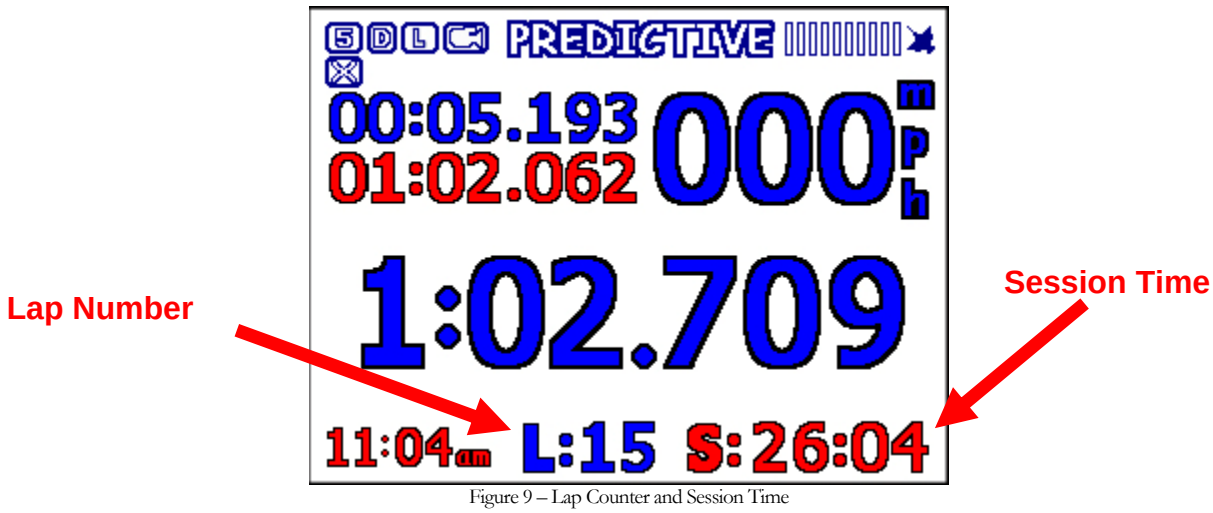

Figure 9 – Lap Counter and Session Time

User Preferences

To set user preferences you need to be in the Main Menu screen. To set your preferences, touch the screen anywhere but on the Set Start/Finish button. Two buttons will appear at the bottom right of the screen. If you accidentally hit the Set Start/Finish, don't worry you can reset it in the Main Menu screen. Press the Main Menu button and the Main Menu screen will appear. From here you will set your preferences.

Timing Screen

The Track Commander has 5 different timing modes that you can choose from; it ships from the factory in predictive mode. Touch on the Timing button on the right to set the timing mode on the left (Fig 10).

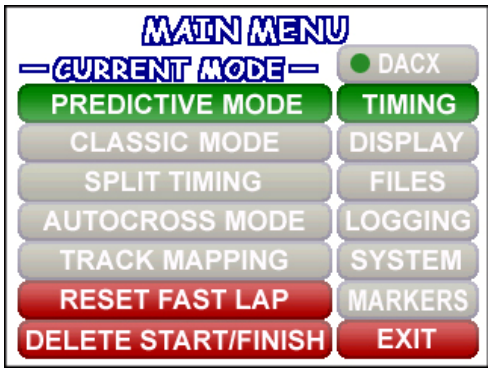

Figure 10 – Timing Screen

The Timing screen allows you to select which timing mode you want the Track Commander unit to be in. Predictive Timing puts the unit in predictive mode; you will need to set at start/finish and drive a complete lap around the track before you will receive predictive lap times. Classic Lap Timing mode will only give you your lap times as you cross the start/finish line. Autocross mode allows you to set a finish line, while the start line is based off G-Forces. Split Timing lets you set a different start/finish so that you can section up the track and only work on that particular section of track. Predictive timing does not work while the unit is in autocross mode. Track Mapping mode is explained later in this manual. This is also where you can reset your fastest lap and the start/finish line. The fastest lap is used in both the predictive and classic lap timing mode. This is the lap that all times are compared to and is displayed in the Driving screen. If you reset the fast lap you will have to drive a complete lap around the track before the predictive timing will work, you do not have to reset a start/finish line. The Delete All Data button will delete the start/finish line and the fast lap. You will have to reset a start/finish line and drive a complete lap before predictive lap timing will work. Press either the Exit button if you are done setting your preferences or select another option in the Main Menu screen. When the Exit button is pressed, your preferences are saved and you are taken back to the Driving screen.

Display Screen

The Display screen (Fig 11) allows you to set up the screen the way you want. You can select the screen color, brightness or calibrate the screen.

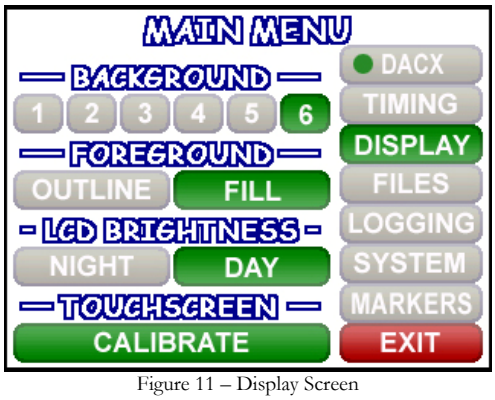

Figure 11 – Display Screen

There are six different backgrounds to choose from. The Foreground option allows you to either fill or outline the numbers on the screen. Choose whichever one allows you to see the numbers the best. LCD Brightness allows you to choose between day and night mode. Day mode is brighter than night mode. The Touchscreen option allows you to

calibrate the touchscreen. The touchscreen is already calibrated in the factory but you can choose to redo it if you don't feel the screen is responding well to your touch. If you calibrate the touchscreen you need to power the unit off and on before the changes will take effect. Press either the Exit button if you are done setting your preferences or select another option in the Main Menu screen. When the Exit button is pressed, your preferences are saved and you are taken back to the Driving screen.

Files Screen

The Files screen (Fig 12) is where you can see how many logged session files or backup files you have on your unit.

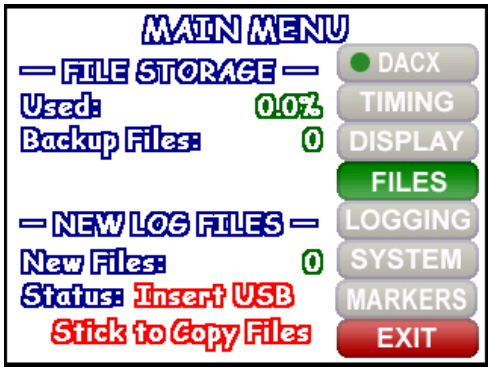

Figure 12 – Files Screen

File Storage shows you how much of the memory you have used and how many minutes you have left to log. The Log Files shows you how many files you have logged, the size of the files, and whether or not you have a USB memory stick plugged into the unit to download files. Press either the Exit button if you are done setting your preferences or select another option in the Main Menu screen. When the Exit button is pressed, your preferences are saved and you are taken back to the Driving screen.

Logging Screen

The Logging screen (Fig 13) is where you set your logging preferences. This is where you will set up how you want your Track Commander to start and stop logging.

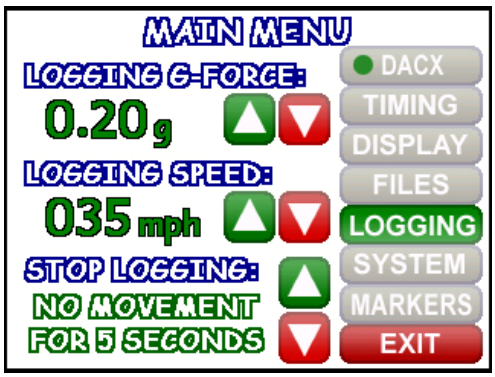

Figure 13 – Logging Screen

Logging Speed is the speed which you want to reach before your unit starts to log data. You don't want to set it too low so you won't start logging while you are driving around the pits. We recommend 35 mph. Stop Logging is where you set how long after the car has stopped that you want to stop logging. The Logging screen is also where you set the Logging G-Force limit. This setting is used in both the Performance Mode and Autocross Mode. You want to set it low enough so that your car will start logging when it accelerates but not so low that it starts logging when your car barely moves forward. We recommend starting at 0.2 g. Press either the Exit button if you are done setting your preferences or select another option in the Main Menu screen. When the Exit button is pressed, your preferences are saved and you are taken back to the Driving screen.

System Screen

The System screen (Fig 14) allows you to set the time and date so the logged files will have the correct times. If you press the 'Units' button a screen will appear to allow you choose either standard or metric units. The 'Video' button allows you to choose if you are connected to a ChaseCam or other auxiliary camera (GoPro).

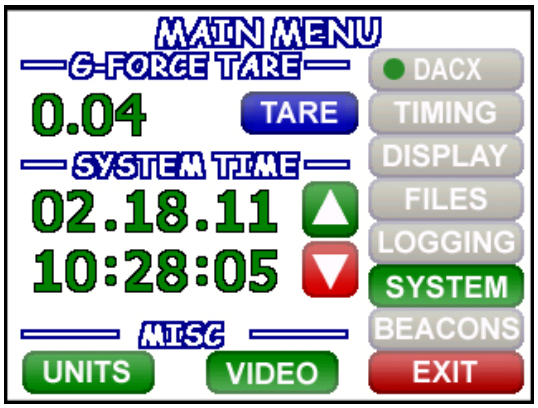

Figure 14 – System Screen

This screen also lets you "zero out" your internal 3-axis G-Force sensor. Mount the Track Commander as level and perpendicular to the road as you can. Before you press the tare button to "zero out" the G-Forces, make sure you are on level ground and not on a hill. It is important to tare the Track Commander as level as possible especially if you are going to be using the performance mode. You should repeat this procedure every time you relocate the Track Commander. Press either the Exit button if you are done setting your preferences or select another option in the Main Menu screen. When the Exit button is pressed, your preferences are saved and you are taken back to the Driving screen.

Markers Screen

The Markers screen (Fig 15) allows you to set the number of beacons for Predictive lap timing mode.

Figure 15 – Beacons Screen

You can set up to 99 beacons. For a 1 mile track we would recommend 10 beacons, for a 2 mile track we would recommend 15 beacons, for a 3 mile track we would recommend 20 beacons, etc. These should be considered starting points, please adjust the number of beacons to you your liking. The Markers screen is also where you can save a start/finish line, load a saved start/finish line, or import a start/finish line from a USB memory stick. Press either the Exit button if you are done setting your preferences or select another option in the Main Menu screen. When the Exit button is pressed, your preferences are saved and you are taken back to the Driving screen.

GPS

GPS is included with all Track Commanders, and allow you to get exact track maps, lap times, predictive times, and split times. Standard GPS units included with your Track Commander are the 5 Hz, although a 10 or 20 Hz model is also available from R.L.C. We recommend that you place the GPS antenna somewhere on the center line of your car (away from the engine compartment or any type of electrical noise), in clear view of the sky, and horizontal or parallel to the sky.

When connecting the GPS for the first time it could take upwards of an hour to lock onto satellites and start transmitting data, due to a significant change of position. When making a connection for the first time make sure the antenna is in clear view of the sky and the cord is completely uncoiled. After the GPS has established a connection for the first time, connecting to satellites can take as little as 5 seconds to a maximum of 1 minute.

The top right of the screen will flash until a GPS connection has been made. To view how many satellites your GPS unit is connected to, look at the satellite bar on the top right of the screen. When the GPS initially connects, it will only be connected to maybe 4 satellites. As the GPS units stays on it will connect to more satellites automatically. When a differential signal has been locked onto a 'D' with a box around it will appear in the upper left hand corner. Also indicated in the upper left hand corner of the screen will be the GPS (5, 10, or 20 Hz), an 'L' will appear when you are logging data, and if you have a ChaseCam camera connected a camera icon will appear.

If you would like to verify that the GPS is working and connected properly, you can simply look at the top right hand corner of the screen at the GPS satellite indicator (Fig 16). The GPS satellite indicator has bars, each bar represents a satellite the Track Commander is connected to.

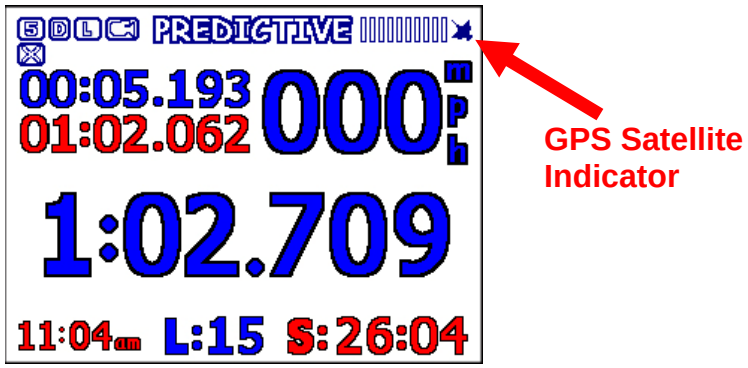

Figure 16 – GPS Verification

Setting the Start/Finish Line

A start/finish line must be set (or loaded) on your unit so the pop up lap timer, lap counter, and predictive lap timer works properly. To set a start/finish you must be moving forward (at least 25 mph) and on the track (not in the hot pits). You can also load a saved start/finish (described in the next section). Usually you set the start/finish line on your first lap around the track. Once the start/finish line has been set or loaded, your unit will remember it until you drive a different track and/or set a different start/finish line. This start/finish lap will also be recorded as

your base lap for when the unit is in predictive mode. To read more about predictive lap timing, see the GPS predictive lap timer section below.

To set the start/finish line you need to press the big, green Set Start/Finish button on the driving screen (Fig 3). When your car passes the spot on the track that you want to mark as the start/finish line press the Set Start/Finish button. Make sure you drive a complete lap around the track so that your base lap for predictive lap timing will be established.

Save Start/Finish Line

The Track Commander allows you to save off a start/finish line that you have created so that you can re-load it at a later date or share it with a friend. To save the start/finish line you created while out on the track, navigate to the Markers screen (Fig 15) and touch the 'Save Start/Finish' button. The save start/finish screen will appear (Fig 17).

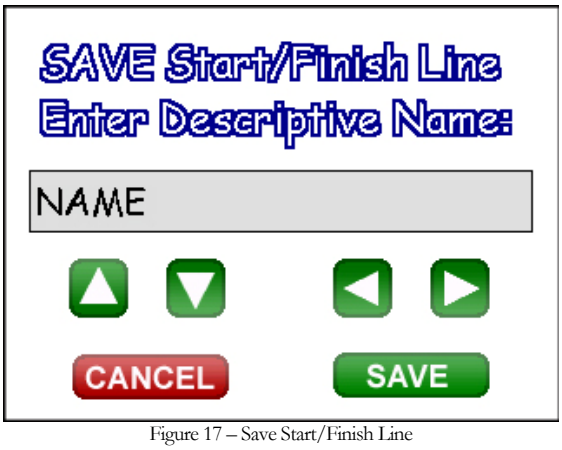

Figure 17 – Save Start/Finish Line

The screen will prompt you to enter a name for the start/finish line. We recommend naming the start/finish after the track, whether it is clockwise or counterclockwise, and the track configuration. To enter the name touch in the name section and use the or buttons to select the desired letter. Once you get to the desired letter press the button. Repeat this process until you spell out the name you want for the start/finish line. Once you are finished press the 'Save' button. Now you can re-load the saved start/finish at any time in the future.

Load Saved Start/Finish Line

To load a saved start/finish line navigate to the Markers screen (Fig 15) and touch the 'Load Start/Finish'. The select start/finish line screen will appear (Fig 18).

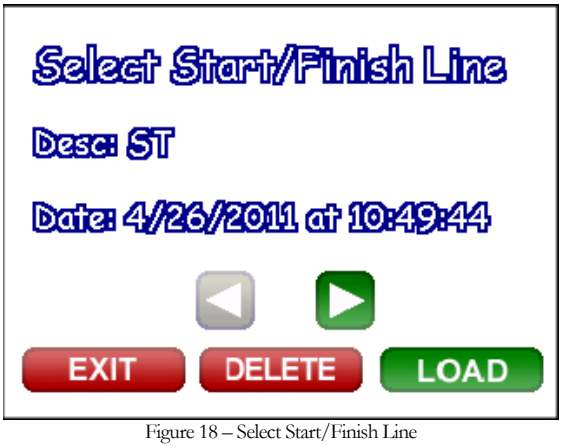

Figure 18 – Select Start/Finish Line

Use the and buttons to scroll through the saved start/finish lines. When you find the start/finish line you are looking for touch the 'Load' button. This is also where you can delete a start/finish if you no longer want it. If you got to this screen by error, touch the 'Exit' button. When you touch the 'Exit' button on the Main menu screen (Fig 15) the timing screen will look like Figure 19. You will have to record a base lap for predictive lap timing so make sure when you drive through the start/finish for the first time you drive one complete lap before coming off the track.

Figure 19 – Timing Screen After A Start/Finish Is Loaded

Transfer Start/Finish Line To A USB Memory Stick

The Track Commander allows you to transfer saved start/finish lines to a USB stick so you can share them with friends or have a backup of all your start/finish lines so you can reload them when you update your unit. RLC recommends that you backup your start/finish lines on a USB memory stick every time you create a new start/finish. To save a start/finish line to a USB memory stick navigate to the Markers screen (Fig 15). Insert the USB memory stick and the 'USB Backups' button will appear. Touch the 'USB Backups' button and the USB start/finish files screen will appear (Fig 20).

Figure 20 – USB Start/Finish Files

Touch the 'Copy All To USB' button and all the saved start/finish lines will be transferred to the USB memory stick. The saved start/finish lines can be found in the Start Finish Lines folder on the USB memory stick. Note: Be careful not the touch the 'Delete All Off TC' button. This button will prompt you on whether you want to delete all start/finish lines on the Track Commander. Touch 'Yes' to delete all or 'No' to get out of the screen.

Load A Start/Finish Line From A USB Memory Stick

To load a start/finish line from a USB memory stick first make sure the start/finish file in located in the Start Finish Lines folder on the USB memory stick. Navigate to the Markers screen (Fig 15) and plug the USB stick into the USB port. Touch the 'USB Backups' button and the USB start/finish files screen will appear (Fig 20). Touch the 'Copy All From USB' button and all the start/finish lines will be transferred to your Track Commander unit. Note: Be careful not the touch the 'Delete All Off TC' button. This button will prompt you on whether you want to delete all start/finish lines on the Track Commander. Touch 'Yes' to delete all or 'No' to get out of the screen.

GPS Track Map

GPS is the most accurate & precise way to map a track. Every lap that you take around the track is distinctive and unique. Unlike mapping a track with G-Force, just a single lap will render an accurate map based on your exact line you drove. G-Force requires that you make multiple laps and then the other companies PC software will average your laps and create a track map based on those averages. Each lap will look exactly the same and the data can be off as much as 30 feet! With RLC, each lap will look different because each line you drive around the track is slightly different. The data that is recorded from each lap is extremely accurate. R.L.C. does not average and compress your data to create a track map; instead our software creates a track map based on each individual lap. The Race Analyzer software creates a generic/default track map based on how much of the track you drove on (Fig 21) in each session. The left side of the track will be the leftmost line your car drove on the track and the right side will be the rightmost line your car drove. The narrower the track means that you drove close to the same line every time you drove that part of the track. Now when you analyze your data on the Race Analyzer software, each lap will appear within the track that was created by your car. The track map that was created is specific to the data for that particular session. Each session will render a different track map because you drive differently every time.

Figure 21 – Track Map

Creating an Exact Track Plus Map

R.L.C. offers a track mapping option called Exact Track Plus (Fig 22). A generic/default track map is created with every session but an Exact Track Plus map allows you to see your exact lap lines within the widths of the actual track and you can quickly find your fastest line. You can check R.L.C.'s website or the Pro Race Analysis software to see if an Exact Track Plus map for the tracks you race at have already been created. If you do not find an Exact Track Plus map for a particular race track and you would like to create one please follow the steps on the next page.

Figure 22 – Exact Track Map

Figure 23 – Exact Track Map, Close Up

If you would like RLC to create a new Exact Track Plus map for a track you did not find in the list of tracks we have available then please follow the steps below. You can also send us log files from a track and we will create an

Exact Track Plus map from them. To create a new Exact Track Plus map make sure that you have a **differential GPS lock**. You can check to see if you have a differential lock looking at the indicator field in the top left hand corner of the screen and looking for the 'D' to be on. If you see the 'D' you are locked in, if not give it some more time. A differential lock will ensure that you get the most accurate track map. ***Before*** you go out onto the track, like while in the hot pits, press anywhere on the screen to bring up the navigation buttons. Touch the Main Menu button, touch the Timing button, touch the Track Mapping button, the touch the Exit button (Fig 23). A track mapping screen will appear prompting you to press 'Start' (Fig 24). Once you are in the track mapping screen, drive out onto the track and place your tires as close to the edge of the track as you can (you choose which side you want to drive first). When you are ready, press the 'Start' button; a screen will appear that displays the distance traveled and the distance to the start (Fig 25). Drive the left side of the track. Drive past your initial staring point and then cross over to the right side of the track. Again place your tires as close to the edge of the track as possible and drive the right side of the track. Drive past your initial starting point and press the 'Stop & Save' button and the Exact Track Plus map is saved. The car must travel in the same direction for each lap. If for any reason you want to abort the track mapping press the 'Cancel' button.

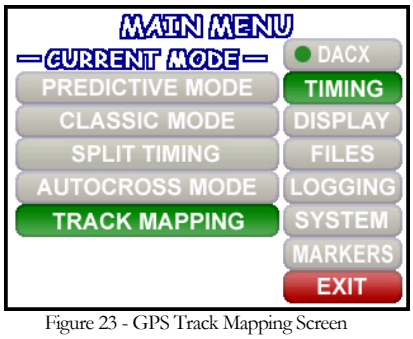

Figure 23 - GPS Track Mapping Screen

MAPPING
Place tires on the edge of the track and begin recording. Complete one lap, then place the tires on the opposite edge of the track. Complete one more lap and stop recording. Travel no faster than 30mph.
START RECORDING TRACK MAP
11 52
L:00
S:00:00
Figure 24 - GPS Track Mapping Screen

Figure 25 - GPS Track Mapping Screen

You want to drive around the track as slow as you can. If you have the 5 Hz GPS you want to stay around 20-25 mph (32-40 kph) and with the 10 or 20 Hz GPS around 25-30 mph (40-48 kph). The slower that you drive the closer together the GPS samples are, this creates a more accurate and smooth track map. The track map will be one of the log files. Send the log file (.bin) to RLC Racing and they will create the Exact Track Plus map so that you can use it in the Pro Race Analysis software. Make sure you include what track it is, the configuration (if there are alternates), website to the track, and any additional information that may be helpful. RLC Racing will use this information and Google Earth to add rumble strips, buildings, flag stations, bleachers, and any other track characteristics we can see. We will send you the Exact Track Plus map file (.map) and now you can analyze your data within the confines of the actual widths of the track.

GPS Lap Timer

GPS is used to measure lap times instead of a stationary beacon you have to place on the track. GPS is more exact and it eliminates the need of buying an expensive lap timer. The GPS lap timer is automatically set up once you set the start/finish line, which was covered in an above section. Now your lap time will pop up on your unit every time your car crosses the start/finish line (Fig 26). Also displayed is the difference between you current lap time and your fastest lap time. If your lap time is faster then it will be (-) in red and if the lap time is slower then it will be (+) in green.

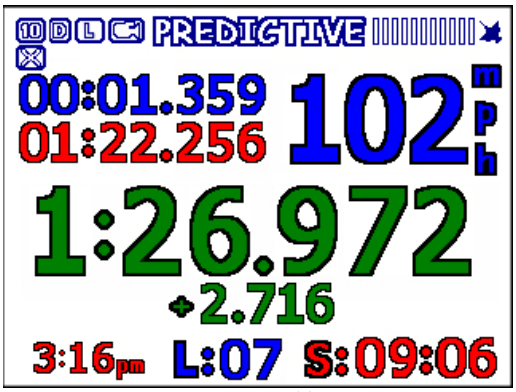

Figure 26 – Lap Timer

GPS Predictive Lap Timer

Predictive lap timing is a great tool when you want to try new things at the track and need some instant feedback. When the race logger is in predictive mode, it will inform you of the time difference at that current location on the track between your current lap and your fastest lap (ever), so you know if things are helping or hurting (Fig 27). If you are currently faster than your fastest lap then the time difference will be (-) in red and if you are currently slower then it will be in (+) green. The GPS predictive lap timer is automatically set up once you set the start/finish line, which was covered in an above section.

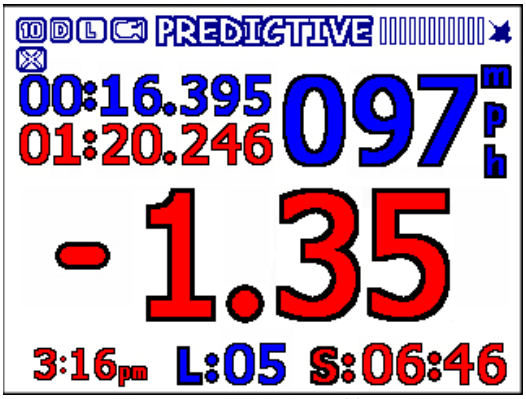

Figure 27 – Predictive Lap Time

GPS Split Lap Timer

The split lap timing feature on the Track Commander lets you divide up the track to work on a specific section to get your lap times down. By setting markers, you can section off the parts of the track you want to work on. You can set to two split markers on the track. When the unit is in split mode it will display the time it took to get through the same markers you set and the difference between your current time and your best time (Fig 28). If you were faster than your fastest time then the time difference will be (-) in red and if you are currently slower then it will be in (+) green.

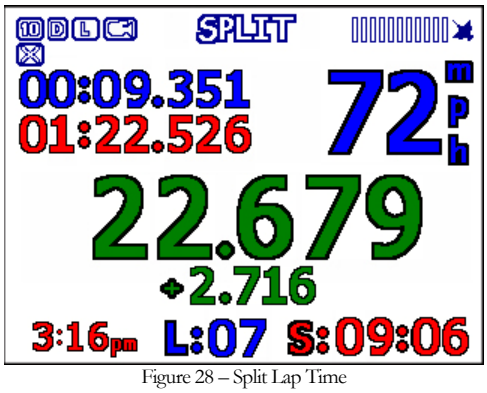

Figure 28 – Split Lap Time

Figure 29 – Split Setup Screen

To set the split lap timer, navigate to the Timing screen (Fig 10). Touch the Split button then press the 'Exit' button. Another screen will appear (Fig 29) that will allow you to set a split beacon. Press the 'Set' button once before and once after the section of track that you want to work on. Now every time you cross the marker the time will start and it will stop when you cross the next marker. Your time will flash up on the screen along with the time difference between your current run and your fastest run.

GPS Autocross Timer

The Autocross mode on the Track Commander lets you start timing without having to set a start line. The Track Commander does not require a start line to be set because it starts logging/timing using the internal G-forces (when your car accelerates it starts timing). G-Force limits can be set in the Logging screen (Fig 13). Your first time through the course you will have to set a finish line. Every time you line up to take another turn you will need to touch the screen where the time is to reset the unit. Once the unit has been reset to zero, the Track Commander is ready for another run.

To place the Track Commander in Autocross mode, navigate to the main menu. Touch the 'Autocross Mode' button in the Timing screen. When you exit from the main menu you will see a screen prompting you to set a finish line (Fig 30). Press the 'Set New Finish Line' button when you cross the place on the track that you want to be the finish line.

Figure 30 – Autocross Mode

Now when you accelerate the timer will start and it will stop when you cross the finish marker. Your time will flash up on the screen along with the time difference between your current run and your fastest run. The fastest time will reset every time your unit is powered off.

GPS Performance/Drag Mode

The Track Commander can easily be switched over to Performance/Drag Mode. The Performance Mode allows you to measure your car's horsepower, acceleration (0-60 or 0-100 mph), deceleration (60-0 or 100-0 mph), ¼ and 1/8 mile times, and max G's.

To place the Track Commander in Performance mode touch on the screen, you will see two buttons drop down from the top of the screen (Fig 31). Touch on the 'Performance' button and the Drag Mode screen will appear (Fig 32).

Figure 31 – Navigation Buttons

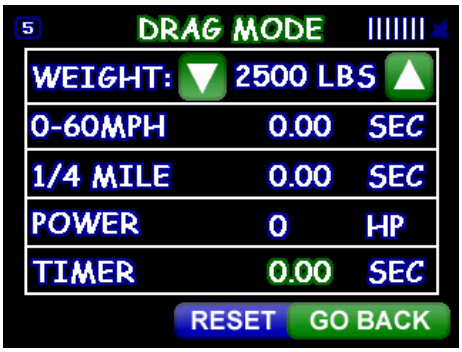

Figure 32 – Performance Mode

Figure 33 – Performance Mode 2

Enter in the weight of your car and select which performance measurements you want to see. Simply touch on the screen in the different areas to change the measurements. Above is another screen shot of more performance measurements (Fig 33). These performance measurements can be selected on the fly (while the car is moving). All performance measurements will start off of G-Forces which can be set in the logging screen (Fig 13). Once you are done with your run you will need to click on the 'Reset' button to reset all measurements. For deceleration measurements a 'Ready' indicator will appear in the bottom left hand corner when you have reached the appropriate speed.

When you are done with performance measurements you can go back to the timing screens by touching on the 'Go Back' button when the car has come to a complete stop.

Stop Logging / Summary Screen

Stop Logging

When you are done with your track session and your car has come to a stop, the Stop Logging button will appear on the bottom of the screen (Fig 34). You can either press it to stop logging or let the unit stop logging on its own (you set the time in the Logging screen). **It is important for the unit to stop logging *before* power is removed!** If you remove power before the unit has stopped logging then you could lose lap information or your log file could possibly become corrupted and you will not be able to play it on the Race Analyzer Software. This is why we recommend direct wiring to your battery. The next time you power the unit on the fastest lap from the previous session is displayed in the Driving screen and the entire summary of the previous track session can also be viewed in the Summary screen.

Figure 34 – Stop Logging Button

Summary Screen

When the unit has stopped logging, the Main Menu/Summary button will appear at the bottom right corner of the screen. Once you have stopped logging, you can view the Summary Screen (Fig 35) and see a summary of your track session. You can sort your data by lap or by time by pressing LAP or TIME. Press the up or down arrow buttons to scroll up or down through your lap times. When you are done you can either press the Timing button to go back to the Driving screen or press the Main Menu button to see the Main Menu screen.

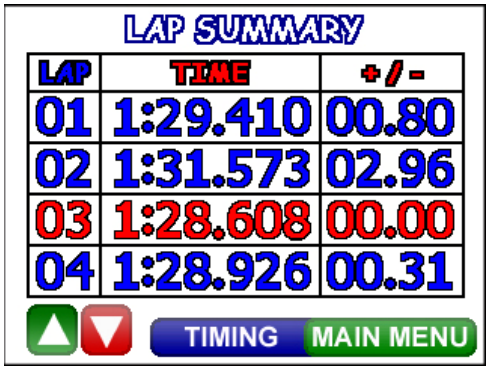

Figure 35 – Summary Screen

Race Log Files

Each time you go out on the track the Track Commander creates a logged file session. These logged sessions can downloaded to your PC to analyze the data with the RLC Race Analysis software with the USB stick provided with your unit. To transfer the logged session files from your Track Commander to a PC you only need to connect a USB memory stick, there are no extra cables to attach just the USB stick. Make sure the car is not running before you upload, copy, or delete files from the Track Commander. Each time you offload a log file it makes a copy and stores it in a backup folder on the Track Commander for future use.

Uploading Race Log Files

To transfer a logged session from the Track Commander to a PC you will need the USB memory stick that was included with your Track Commander but also available at your local office store. Insert the USB memory stick into the USB connector coming out the side of the unit. The Track Commander will recognize the USB stick and if there are log files to upload then it will switch over to the Files screen (Fig 36). The Files screen will show you how many log files there are to upload. Touch the Transfer to USB button to upload the log files. With the logged sessions now on your USB stick, you can load them into the RLC Race Analyzer software and study your data. Every time you offload a log file from the Track Commander it will automatically create a backup file. This backup file is stored in a backup file directory on the Track Commander for future use. Please see the section below on how to copy and offload a backup file form the Track Commander.

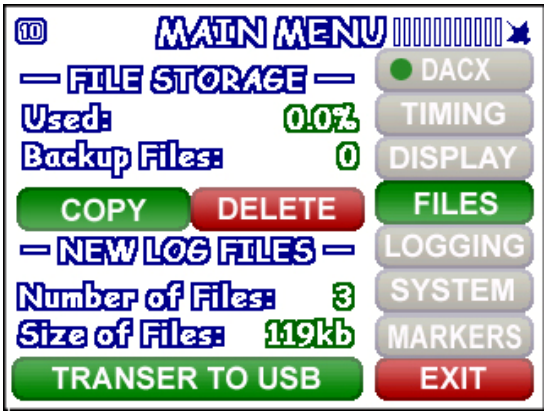

Figure 36 – USB Stick Plugged In

Copying Backup Log Files

To offload the backup files navigate to the Files screen. Simply plug in the USB stick that was provided with the Track Commander and touch the 'Copy' button under the File Storage section on the screen (Fig 36). Your backup log files will start to copy onto your USB stick. With the logged sessions now on your USB stick, you can load them into the RLC Race Analyzer software and study your data. You can also choose to delete the backup files from your Track Commander by clicking the 'Delete' button.

Synchronized Video

RLC worked closely with ChaseCam to produce the only truly synchronized video. By connecting a ChaseCam PDR to a Track Commander the data is actually embedded in the video file to create just one file. By embedding the data in the video file we ensure that the data being taken by the Track Commander (speed, track position, lap times, etc.) is in fact directly linked to the video being taken by the camera. Now when you play your synchronized video log file on the Pro Race Analysis software your video, data, and track position are exactly linked. You can click any place on the track and your video and data will all jump to that exact position. Knowing that your data and video are truly synchronized you can analyze your data in more depth than ever before. You can see the exact position you applied the brakes, when you dove into a turn, and when got back on the throttle. Compare this to your fastest lap and you will improve your lap times in no time at all.

ChaseCam PDR Camera

The ChaseCam PDR needs to have its own source of power; again we recommend that you wire directly to the battery, and needs to share the same ground as the Track Commander.

Firmware

The ChaseCam PDR needs to have the latest firmware, version 01.02.12 or higher, installed so that it will properly communicate with the Track Commander. If you ordered your ChaseCam camera recently from RLC or directly from ChaseCam it will already have the latest firmware installed. If you ordered from a dealer or it is an existing camera you may want to check the current version on your camera. To check the version number on your ChaseCam PDR, look at the screen while the camera is booting (Fig 37).

Figure 37 – ChaseCam PDR Loading Screen

If your firmware is an older version then you will need to download the latest firmware from the ChaseCam website, www.chasecam.com/pdr.update, and install it.

Settings On The ChaseCam PDR Camera

With up-to-date firmware installed on your unit you can now load the pre-defined shortcut option that allows the ChaseCam PDR to work exclusively with the Track Commander. To load this pre-defined option press the Menu button on the ChaseCam PDR, select the Shortcuts option, select the Data Acquisition option, then select Data Acq 5 – Chase RLC (Fig 38).

Figure 38 – ChaseCam PDR Shortcut

The pre-defined shortcut option needs to be loaded so that ChaseCam PDR is set up properly to work with the Track Commander. There are no settings that need to be set on the Track Commander.

Setup The Track Commander

The Track Commander needs to be set to the correct camera settings in order to interface with the ChaseCam PDR100. Navigate to the System screen and touch the Video button. The Select Camera screen will appear (Fig 39).

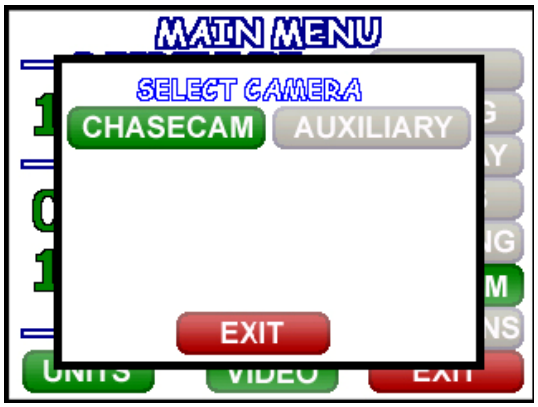

Figure 39 – Select Camera Screen

Touch the ChaseCam button and then touch the Exit button. Your Track Commander is now setup to work with a ChaseCam camera.

Connecting To The ChaseCam PDR

Make sure that the Track Commander is off before you connect to the ChaseCam camera. If you have the new style harness a standard Ethernet cable is used to connect the Track Commander to the ChaseCam PDR (do not use a cross over cable). If you purchased your ChaseCam PDR from RLC then the video cable was included, otherwise you can either order a video cable from RLC or from a local office supply store. Plug the video cable into the connector on the harness that is labeled 'Video' and then plug into the back of the ChaseCam PDR (Fig 40). If you have the old style harness then plug the cable that is labeled Video directly into the back of the ChaseCam PDR. When plugging in cables, make sure the car is turned off and there is no power to the ChaseCam PDR or Track Commander.

Figure 40 – Track Commander Connected to ChaseCam PDR

With the Track Commander plugged into the ChaseCam PDR the RLC unit will completely control the camera; it starts recording when the Track Commander starts logging and stops recording when it stops logging. There are no special settings that you need to do on the Track Commander, it will automatically connect and control the ChaseCam camera.

Verify Connection

When you successfully set the ChaseCam PDR up and have connected it to the Track Commander it is time to verify the connection. Start your engine and look at the screen of the Track Commander. When the Track Commander recognizes that you are connected to a ChaseCam camera you will see a camera icon in the top left of the driving screen in the indicator field (Fig 41).

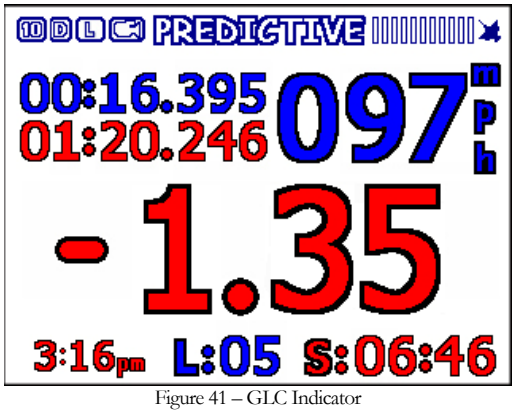

Figure 41 – GLC Indicator

Also look at the ChaseCam PDR. When it is ready to start recording the light on the front will be solid green (Fig 42).

Figure 42 – ChaseCam PDR Light Green

Verify ChaseCam PDR Recording

When you have successfully verified that your ChaseCam PDR is connected to your Track Commander you need to verify that it is recording properly. The Track Commander will completely control the ChaseCam PDR; it will tell the camera to start recording when the RLC unit starts logging and tell it to stop recording when the RLC unit stops logging. When the L appears in the indicator field in the top left hand corner of the screen, the RLC unit is logging data (Fig 41). Check the light on the front of the ChaseCam PDR, it should be flashing red to indicate that it is recording (Fig 43).

Figure 43 – ChaseCam PDR Light Red

GoPro Camera

The Track Commander can interface with a GoPro camera. It will turn it on and start recording when the Track Commander starts logging data and stop recording when it stops logging data. If you are using a GoPro camera with the Track Commander you will need to manually synchronize the video file to the log file using the Pro Race Analysis software. For more details about manual synchronization please see the Pro Race Analysis software manual on the website.

Verify The GoPro Camera

There are 3 different models for the GoPro Hero camera. The HD HERO 1080 with the HERO Bus Port (Fig 44) is the correct model that will work with the Track Commander.

Figure 44 – HD HERO 1080 Camera

The HERO Bus Port is where the CAB-VID-GP (GoPro Camera Cable) that you purchased from RLC will plug in. Note: You will need to router out the back of the case to accommodate the cable.

Setup The GoPro Camera

The GoPro camera needs to be set to One Button On mode. Please refer to the instruction manual included with your GoPro camera on how to place it in the One Button On mode. The instructions can also be found at the GoPro website, visit www.gopro.com/support.

Setup The Track Commander

The Track Commander needs to be set to the correct camera settings in order to interface with the GoPro camera. Navigate to the System screen and touch the Video button. The Select Camera screen will appear (Fig 45).

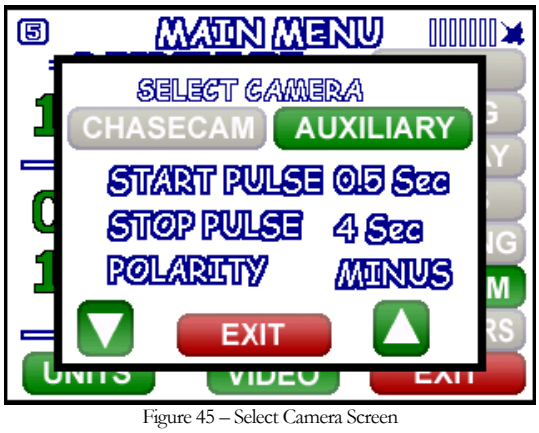

Figure 45 – Select Camera Screen

Touch the Auxiliary button and then touch the Exit button. Your Track Commander is now setup to work with a GoPro camera. Note: Do not change any of the settings for the GoPro camera.

Connecting To The GoPro Camera

Plug the CAB-VID-GP cable you purchased from RLC into the back of the GoPro camera. Plug the video cable on the Track Commander harness into the other end. Depending on which style harness you have, you may need to purchase an Ethernet cable to connect to the GoPro camera (a cross over cable will not work). If you have the female video plug on your harness (looks like a phone plug receptacle) you will need to purchase an Ethernet cable to connect the Track Commander to the GoPro camera. If you have the male video plug (looks like an Ethernet plug) then it can simply be plugged directly into the CAB-VID-GP. However, you may need to get a video extension cable to lengthen the connection (RLC sells a video extension cable).

Verify Connection

Apply power to the Track Commander. You will notice that the GoPro camera will turn on and it will automatically turn off once the Track Commander has fully booted up. When the Track Commander has started logging data (the L in the upper left hand corner will be on) the GoPro camera will turn on and start recording. When the Track Commander has stopped logging data (L will turn off) the GoPro will stop recording and turn off.

Removing Power

When you have finished your session and are ready to turn your engine off or remove power you **must wait for the Track Commander to stop logging first!** The L in the indicator field will turn off when the Track Commander has finished logging (you set your logging preferences in a section above).

ChaseCam Camera

Once the Track Commander has stopped logging it will tell the ChaseCam PDR to stop recording, again the light on the front will turn to solid green. If you do not let your Track Commander stop logging before power is removed, you will corrupt your synchronized video file and you will not be able to use it in the RLC Race Analysis Software.

GoPro Camera

Once the Track Commander has stopped logging it will send a pulse to the GoPro camera and it will stop recording and turn off. If you do not let your Track Commander stop logging before power is removed, it will never send the pulse to the GoPro camera and it will continue to record until you manually stop recording.

Downloading Synchronized Video Log File

ChaseCam Camera

When you are ready to download the synchronized video log file so you can analyze your data in the Pro Race Analysis software, you do so from the compact flash card in the ChaseCam PDR recorder. It is a .mpg file that you can play as a regular video file in a Windows Media Player but if opened in the Pro Race Analysis Software it will contain both the video and the data. You do not have to download the log file from the Track Commander if you don't want to because the data is already contained in the video

file. It is the .mpg file from the compact flash card in the ChaseCam PDR camera that you want to open in the PC software so you have synchronized video file.

GoPro Camera

When you are ready to download the video file so you can analyze your data in the Pro Race Analysis software, you will need both the video file on the SD card from the GoPro camera and the log file from the Track Commander. Once you are in the Pro Race Analysis software you can use the tools to manually synchronize the two files together. Please see the Pro Race Analysis software manual for more details.

Corrupt Synchronized Video File?

If you find that your camera turned off accidentally while out on the track or you removed power too soon, your synchronized video file will be corrupt. You cannot open it in the Race Analysis Software but you can still view it as a standard video file.

The log file on the Track Commander can always be used for data analysis, even if the synchronized video file is corrupted. The data (.bin) log file on the Track Commander only contains the data, not the video. Use the USB memory stick included with the Track Commander to offload the log file.

Adding A DACX

The Track Commander can be turned into a data logger by connecting any one of our Data Acquisition Channel Expander (DACX) modules. You can add analog and digital channels and/or OBD-II connectivity, please see our website for the different types of DACX modules available. One DACX module can be added to the Track Commander. The Track Commander will log all data from the sensors and/or OBD-II port. You cannot display the data as you can with our Micro Pod or Pro unit systems, it will only log the data so that you can use the data in the Pro Race Analysis Software. However, you can view the DACX screen to see the real time value of the sensors to check to make sure they are reading correctly. The Track Commander also differs from the Micro Pod and Pro units in that you cannot calibrate your own sensors. It comes loaded with all the RLC sensors calibration files but if you want to add a sensor not in the list then you will have to connect it to the sensor called Volts and record the voltage. Then in the Pro Race Analysis Software you can use the Math Equation creator and apply the proper equation to the sensor and graph the data.

With the power off, connect the DACX module and then power the unit on. When the Track Commander powers up you will notice that you now have a new indicator icon, in the upper left hand corner of the screen which indicates that a DACX module is connected. You can also tell if a DACX module is connected to your Track Commander if the DACX button on the Main Menu screen has a green circle (Fig 46). If the circle on the DACX button is red then a DACX module is not connected (Fig 47).

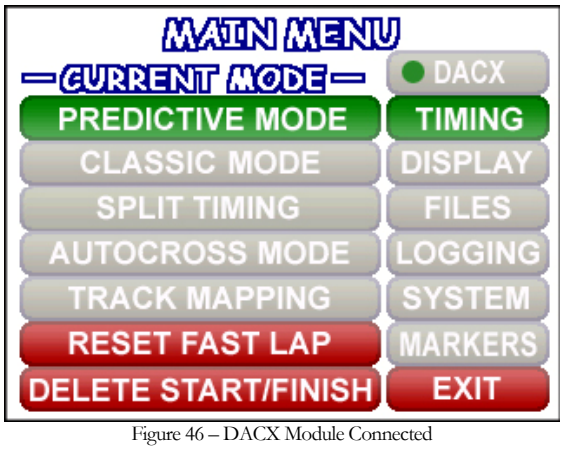

Figure 46 – DACX Module Connected

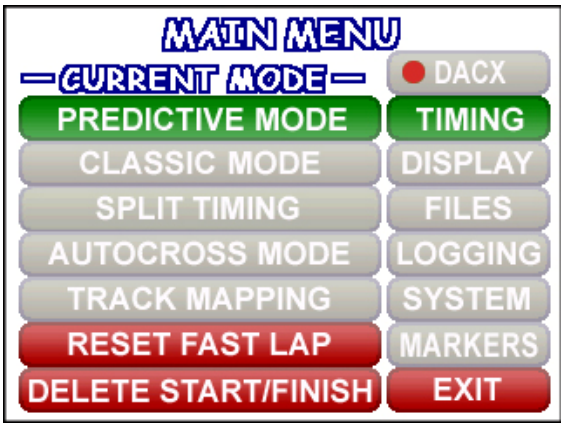

Figure 47 – DACX Module Not Connected

To add a sensor to log, navigate to the Main Menu screen by touching the screen then pressing the 'Main Menu' button. You will see the DACX button on the top. Press the 'DACX' button and the DACX screen will appear. The DACX screen will show you all the sensors that are being logged by the Track Commander and their value. You can see that the internal 3-axis G-Force sensor and Car Battery is being logged. These sensors are always logged on the Track Commander. As you add sensors to the Track Commander the DACX Screen will display the sensor along with its value (Fig 48). This screen can be used to verify that sensors are reading correctly. If you have more sensors than can be displayed on the screen the up and down arrow will highlight to let you scroll through the available sensors.

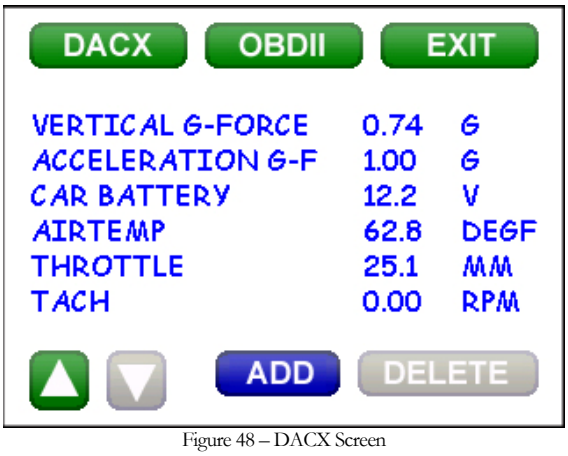

Figure 48 – DACX Screen

If you purchased one of the DACX modules that offers OBD-II connectivity the OBD-II button will be green. If you purchased one of the DACX modules that does not have OBD-II connectivity the OBD-II button will be grayed out. If you are done with this screen you can click the 'Exit' button and it will take you back to the Main Menu screen.

When adding sensors to the Track Commander make sure that you have the correct sensor assigned to the correct channel. You cannot edit the sensors and channels the way you can with the Micro Pod and Pro units. If you make a mistake you must delete that sensor and start over.

Add An Analog Input Sensor

To add an analog input sensor click the 'Add' button. The Add Sensor screen will appear (Fig 49). If you do not want to add a sensor you can click the 'Go Back' button and it will take you back to the DACX Screen.

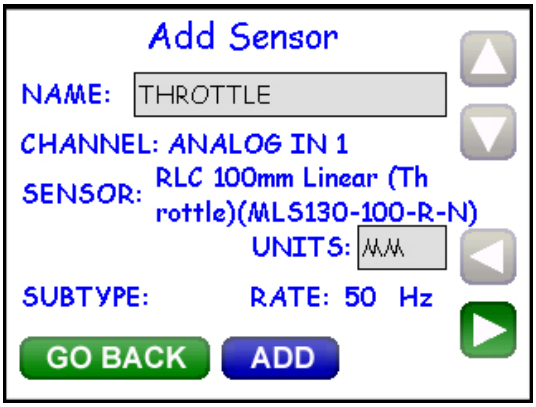

Figure 49 – Add Analog Input Sensor

Select Channel

Verify that the Channel is correct, it should be ANALOG IN 1. If the channel is wrong then touch the screen where is says which channel it is. The channel will highlight and the scrolling arrows, and will highlight. Use the scrolling arrows to select which channel you want to assign the sensor to.

Select Sensor

Once you have verified that you are adding the sensor to the correct channel we need to select which sensor you are adding. Touch the screen where it says which sensor is to be added. Again the name of the sensor will highlight and you will use the scrolling arrows, and to select which sensor you want to add. In Figure 49 we have chosen to add the RLC 100mm Linear (Throttle)(MLS130-100-R-N) sensor.

Name The Sensor

In the space next to Name, is the name of the sensor and how it will appear in the Pro Race Analysis Software. If you are happy with the name you can leave it or you can add your own, in Figure 49we called the sensor Throttle. To delete the current name press the arrow until it erases the name. To enter a name press the or button until you get to the desired letter. Once you get to the desired letter press the button. Repeat this process until you spell out the name you want to label the sensor.

Units

When you have selected a sensor it may or may not have units assigned to it. If it does not have units assigned to it touch in the box next to Units and repeat the same process as you did with typing in a name.

Sampling Rate

To select the sampling rate touch the screen next to Rate. The number will highlight. Press the or button to select the sampling rate. You can select either 1, 2, 4, 5 10, 20, 25, 50, or 100 Hz. Sampling rate should be determined by the sensor. For sensors that change quickly like shocks or throttle position you will want to select a higher sampling rate. But on sensors that change slowly like temperature you would want a lower sampling rate like 5 Hz.

Subtype

If the sensor you have chosen to add to the Track Commander has a subtype it will appear next to the Subtype section. Sensors with subtypes include brake pressure sensors, you can have either front (F) or rear (R) brakes.

To change the subtype touch the screen where it shows the subtype. It will highlight. Use the button to select the subtype.

Add Sensor

Double check all of your selections. If they all appear correct then press the 'Add' button. The DACX Screen will appear. You will notice that the sensor you just added will also now appear.

Add A Digital Input Sensor

To add a digital input sensor click the 'Add' button. The Add Sensor screen will appear (Fig 50). If you do not want to add a sensor you can click the 'Go Back' button and it will take you back to the DACX Screen.

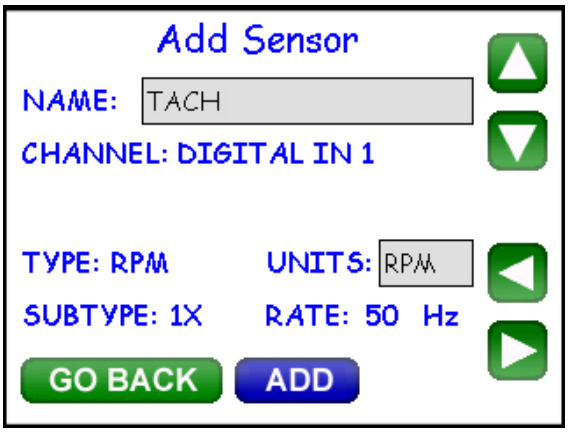

Figure 50 – Add Digital Input Sensor

Select Channel

Verify that the Channel is correct, it should be DIGITAL IN 1. If the channel is wrong then touch the screen where is says which channel it is. The channel will highlight and the scrolling arrows, and will highlight. Use the scrolling arrows to select which channel you want to assign the sensor to.

Select Type of Sensor

Once you have verified that you are adding the sensor to the correct channel we need to select which type of sensor you are adding. Touch the screen next to where it says type. The type of sensor will highlight and you will use the scrolling arrows, and to select which type of sensor you want to add. In Figure 50 we have chosen to add RPM.

Name The Sensor

In the space next to Name, is the name of the sensor and how it will appear in the Pro Race Analysis Software. If you are happy with the name you can leave it or you can add your own, in Figure 50 we called the sensor RPM. To delete the current name press the arrow until it erases the name. To enter a name press the or button until you get to the desired letter. Once you get to the desired letter press the button. Repeat this process until you spell out the name you want to label the sensor.

Units

When you have selected a sensor it may or may not have units assigned to it. If it does not have units assigned to it touch in the box next to Units and repeat the same process as you did with typing in a name.

Sampling Rate

To select the sampling rate touch the screen next to Rate. The number will highlight. Press the or button to select the sampling rate. You can select either 1, 2, 4, 5 10, 20, 25, 50, or 100 Hz. Sampling rate should be determined by the sensor. For sensors that change quickly like RPM you will want to select a higher sampling rate.

Subtype

The subtype of a digital input sensor is the multiplier. For example, we have added RPM and you will have to select a correct multiplier for the logged data to be correct. This will take a couple of tries. If your car shows that your RPM is 800 but the Track Commander is reading 1600 you need a multiplier of 0.5. To change the subtype touch the screen where it shows the subtype. It will highlight. Use the button to select the subtype.

Add Sensor

Double check all of your selections. If they all appear correct then press the 'Add' button. The DACX Screen will appear. You will notice that the sensor you just added will also now appear.

Add An OBD-II Sensor

To add an OBD-II sensor click the 'OBD-II' button. The OBD-II Sensor screen will appear (Fig 48). Click the 'Add' button and the Add Sensor screen will appear (Fig 51). If you do not want to add a sensor you can click the 'Go Back' button and it will take you back to the DACX Screen.

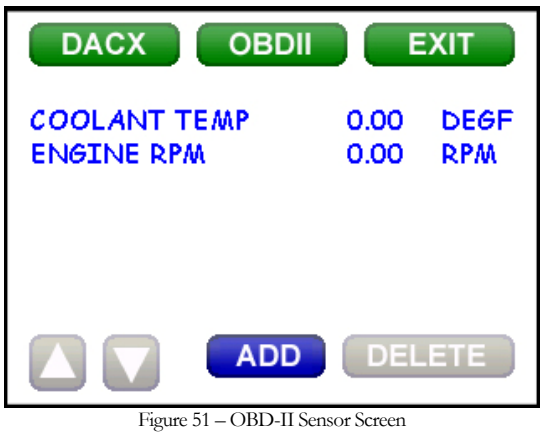

Figure 51 – OBD-II Sensor Screen

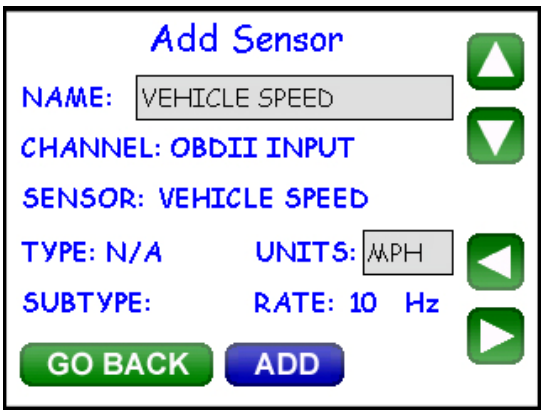

Figure 52 – Add OBD-II Sensor

Select Sensor

To add an OBD-II sensor touch the screen where it says which sensor is to be added. Again the name of the sensor will highlight and you will use the scrolling arrows, and to select which sensor you want to add. In Figure 49 we have chosen to add Vehicle Speed.

Name The Sensor

In the space next to Name, is the name of the sensor and how it will appear in the Pro Race Analysis Software. If you are happy with the name you can leave it or you can add your own, in Figure 52 we called the sensor Vehicle Speed. To delete the current name press the arrow until it erases the name. To enter a name press the or button until you get to the desired letter. Once you get to the desired letter press the button. Repeat this process until you spell out the name you want to label the sensor.

Units

When you have selected a sensor it may or may not have units assigned to it. If it does not have units assigned to it touch in the box next to Units and repeat the same process as you did with typing in a name.

Sampling Rate

To select the sampling rate touch the screen next to Rate. The number will highlight. Press the or button to select the sampling rate. You can select either 1, 2, 4, 5 10, or 20 Hz. Sampling rate should be determined by the sensor. For sensors that change quickly like tach or throttle position you will want to select a higher sampling rate like 10 or 20 Hz. But on sensors that change slowly like temperature you would want a lower sampling rate like 1 or 5 Hz.

Add Sensor

Double check all of your selections. If they all appear correct then press the 'Add' button. The OBD-II Sensor Screen will appear. You will notice that the sensor you just added will also now appear.

Delete A Sensor

To delete a sensor from the Track Commander, select the sensor on the DACX Screen you want to deleted by touching the sensor. The sensor will highlight. Press the 'Delete' button. The delete sensor screen will appear asking if you really want to delete the sensor. Press 'Yes' to delete or 'No' to go back to the DACX screen.

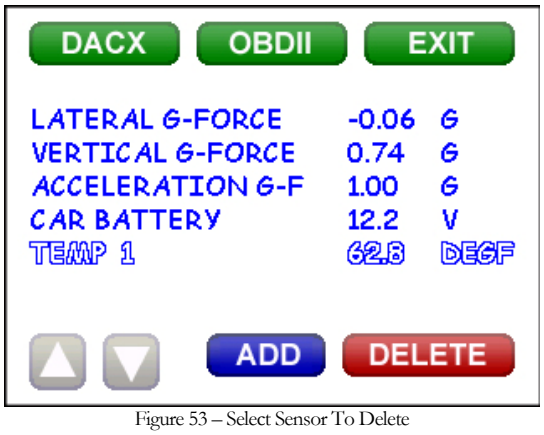

Figure 53 – Select Sensor To Delete

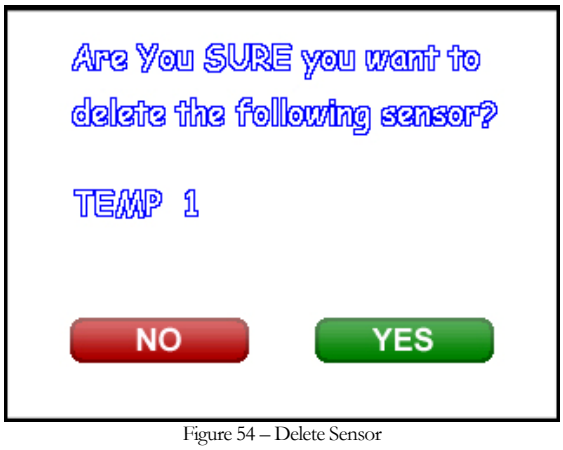

Figure 54 – Delete Sensor

Update Sensor List

The Track Commander only allows you to add sensors that are available from the current sensor list. If you want to update the sensor list or add another sensor that you get from RLC you can do so with the USB memory stick. Create a Sensors folder in the RLC Racing folder on the USB memory stick. Place the new sensor file in the Sensors folder. With the Track Commander powered on, navigate to the DACX screen. Plug the USB memory stick into the Track Commander and the Add Sensor File screen will appear (Fig 55).

Figure 55 – Add Sensor File

The Add Sensor File screen will tell you how many sensor files you have on the USB memory stick. Touch the Copy button to copy all the sensor files from the USB memory stick onto the Track Commander. When the Copy button is pressed, it will overwrite all files with the same name on the Track Commander. You can also delete all sensor files from the Track Commander by pressing the Delete button. Or if you want to exit out of the screen touch the Exit button.

Adding Wi-Fi

Wi-Fi Racing is an add on feature for the Track Commander. With a simple Wi-Fi kit from RLC Racing you can instantly broadcast the data being logged by the Track Commander directly to an iTouch, iPhone, or iPad. In order to use the Wi-Fi feature you need to get a code from RLC Racing. Please call RLC with the serial number of your Track Commander to get the code.

Plug the Wi-Fi dongle (USB portion of the Wi-Fi kit) into the USB port on the Track Commander. Mount the antenna on the outside of the vehicle. Power the Track Commander on. After the Track Commander has powered up the code window will pop up (Fig 56).

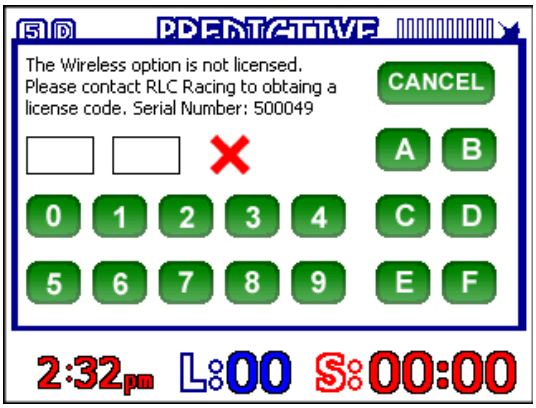

Figure 56 – Enter Wi-Fi Code

Enter the code you received from RLC Racing. If the code is valid then the red X will change to a green check and the 'Cancel' button will change to 'OK'. Press the 'OK' button. You will notice that the GPS satellite in the top right hand corner will change to a Wi-Fi signal, . The Track Commander is now ready to connect to an iTouch, iPhone, or iPad.

Download Wi-Fi Racing App

You will need to go to the Apple store and download the Wi-Fi Racing app from RLC Racing, it is a free app. Search for WiFi Racing and you will find the Wi-Fi Racing App from RLC Racing. Check your wireless settings on your iTouch, iPhone, or iPad. You should see a wireless network like RLC-XX (the XX will be the last two digits of the serial number). Select that network to connect to. Now launch the Wi-Fi Racing app, you should see the home page (Fig 57).

Figure 57 – Wi-Fi Racing Home Page

You will see that under Data it will say 'Waiting', once it has successfully connected to the Track Commander the Data will say 'Receiving'. Now you can watch the drivers data as they are out on the track. You will be able to see their lap times, predictive times, speed, and sensor data.

Password Protecting/ Network Naming

If you want to encrypt your data so that only the people with the password can view your data, you can do so on the Track Commander. Press on the Wi-Fi icon, , in the top right hand corner and a screen will appear (Fig 58).

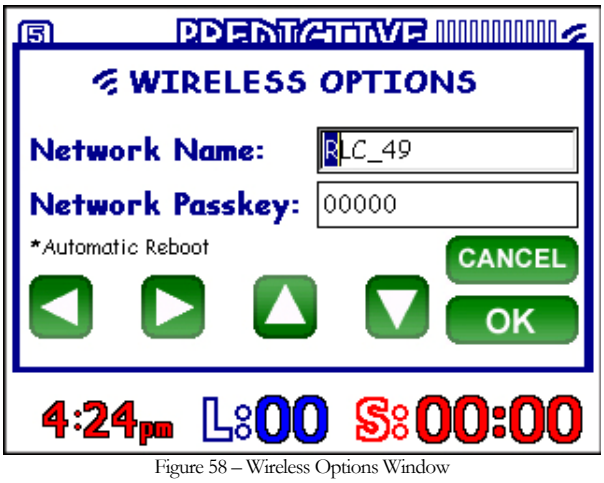

Figure 58 – Wireless Options Window

The network name will appear, RLC_XX (again XX will be the last two digits of the serial number). You can choose to rename the network name and enter your own password. To change the network name or enter a password touch in the appropriate space. Use the or buttons to select the desired letter. Once you get to the desired letter press the button. Repeat this process until you spell out the name you want for the network name or you have selected your password. Once you are finished press the 'OK' button. The Track Commander will now reboot so that your selections will take effect. Remember, you now need to enter the password into the Wi-Fi Racing app on the iTouch, iPhone, or iPad. To enter the password press the Settings button on the bottom right hand corner of the app (Fig 59).

Figure 59 – Settings

Enter the password you created on the Track Commander then press 'Save Passkey'. You should now be able to connect directly to your Track Commander.

Lap and Predictive Times

With the iTouch, iPhone, or iPad is connected to the Track Commander you cannot only view the data and timing live but you can also view any past lap time (Fig 60). While you are viewing the lap times you can also view the predictive times for each lap and the speed through each beacon (Fig 61). By being able to view the predictive times for each lap you can let the driver know what parts of the track you feel they need improvement or what seemed to work best for them.

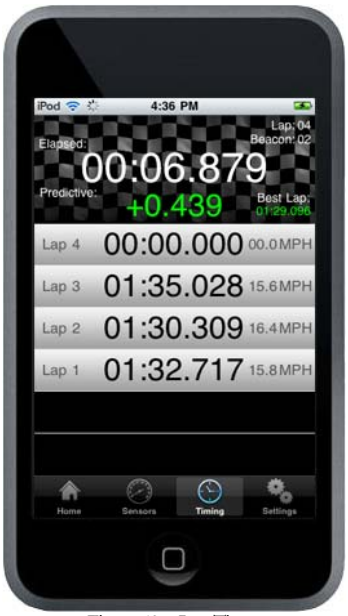

Figure 60 – Lap Times

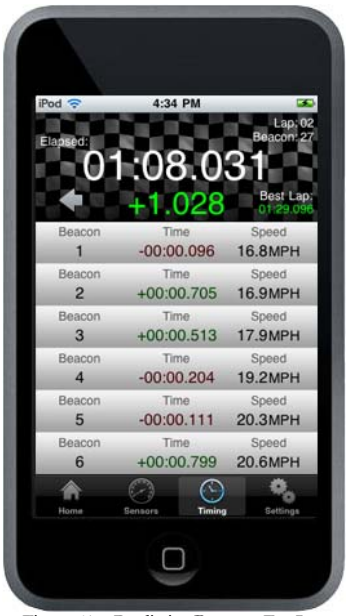

Figure 61 – Predictive Beacons For Lap

Sensor Data

While connected to the Track Commander you can also view the sensor data live (Fig 62) or view the high and low value from any past lap (Fig 63). The Wi-Fi Racing application will display all sensors connected to the Track Commander including the internal 3-Axis G-Force sensor.

Figure 62 – Live Sensor Data

Figure 63 – High and Low Sensor Data From Past Lap

Updating the Track Commander

Updating the Track Commander is very easy to do. R.L.C. will post all new versions of the firmware at our website under Downloads. These same steps are also posted at the website.

To update the Track Commander first download the latest version of firmware onto your computer. Put the file on a USB memory stick; we included it in your kit for convenience. If you have the new style harness: press and hold the program button on the harness, power the Track Commander on (with the program button depressed), and then release the program button after 5 seconds. If you have the old style harness: plug the two USB ports into each other and then power the Track Commander on.

The Track Commander will come up in Update Mode (Fig 64). (*Note: If it comes up into the driving screen, power the unit off and on again.)

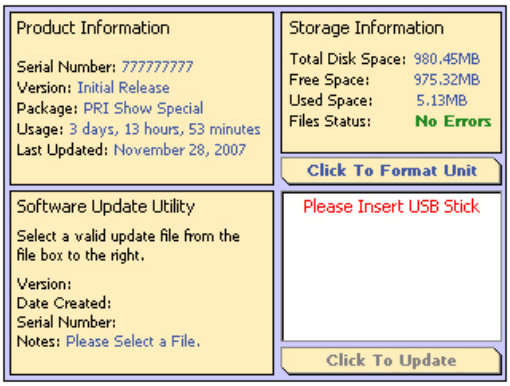

Figure 64 – Update Mode

Once in Update Mode, insert your USB stick. Choose the downloaded file from the file box in the lower right. Once selected, press the 'Click To Update' button. A window will pop up asking you if you want to update, press the 'Continue' button. Once the update has started, leave the unit alone until the update is complete.

When the Track Commander is done updating press the 'Return to Menu' button. Press the 'Click To Format Unit' button to format your SD Card. *Note: This will reset the unit to factory default settings and erase all log files on the unit, so you may want to copy log files off before updating your unit. Once the format is complete, power off your unit, and power back on normally. If the unit does not come up into the standard software, power off and on once again. You are now updated. (*Note: When you power your Track Commander on for the first time after an update please leave it on for 30 seconds before powering off. There are files that are updating and you need to give them time to do so.)